Analysis of an unedited full copy of the PGF First Reel

by Bill Munns October 23, 2011

Higher resolution copies of the First Reel Segments Charts are available from the Report Website, on the “Reference Images and Charts” page.

PGF The First Reel
The Complete Report

The following is a thorough analysis of the famously described “First Reel” of the Patterson Gimlin encounter at Bluff Creek on October 20, 1967. The event is usually described to say that Roger Patterson had a K-100 camera loaded with a 100' daylight reel of 16mm color film that day, but that he had already shot about 76 feet of footage of him or Bob Gimlin on horseback, leading a white pack horse, through the scenic woodlands. Then he encountered the “creature” and used the remaining film in the camera to film this encounter, resulting in 954 frames of film (about 23.85‘ of footage) which ended when the camera ran out of film. This reel is famously called “The First Reel”.

Roger is reported to have unloaded that reel on site and loaded a second reel, and filmed such things as the footprint trackway (of which footage is known and scanned), filmed making a plaster track casting (this is in dispute), filmed some kind of “stomp test” (footage apparently not seen by anyone today in film or still form), filmed himself standing by a large tree holding two plaster casts (footage exists and has been scanned). The second reel content, other than the actual frames scanned, remains highly contentious as to content.

This PDF document focuses of the first reel content only.

The Controversy

Stills and short film/video clips from first reel footage have long been known and shown, copied and studied. So such footage is not disputed as to existing. The controversy boils down to the question of how we can see a true intact first reel to hopefully verify that reel was not edited. For nearly 44 years, this controversy has raged, with constant skeptical claims the first reel was edited and something is missing, something that surely may reveal a hoax.

Most showings of the PGF only show the true Bluff Creek encounter, the last 23.85 feet of the reel, and the pragmatic mind would say that is reasonable because the rest of the footage is of guys on horseback, riding in a leisurely pace with a pack horse in tow through serene woodlands (in other words, real boring stuff, compared to the “creature” encounter). So since most people want to see the creature encounter, the boring horse and rider stuff is often cut out or spliced in at a later point in the program as filler. The paranoid skeptics thus claim the intact full first reel is being hidden from them because of some suspicious reason, and where there’s a suspicious reason, a hoax must be lurking nearby. So this “why can’t we see the full first reel intact?” thing has become a skeptical talking point, one of thousands of petty ‘red flags” to arouse suspicion and set the stage for claiming the film’s a hoax.

A secondary suspicion has to do with some still frames being flipped left/right or there being confusion as to what the correct left/right orientation was, for frame image prints taken from the film. This is a lame concern, because flipping a film image left/right hides nothing of the image data, and can be easily reversed back to correct form, and so it has no ramifications supporting a hoax, but advocates for a hoax do love lame suspicions and wallow in them. Anything pertaining to a film frame image flipped left/right is a non-issue, a concern so petty it does not even deserve

to be called lame. The skeptics who use flipped frame remarks or questions to try and drum up support for a hoax are people demonstrating their appalling ignorance of the routine processes of film-making and film-editing.

The controversy is now officially over, and there is nothing suspicious about the first reel. Die-Hard paranoid skeptics will, no doubt, continue to dredge up reasons to be suspicious, but rational minds should now consider the issue closed and settled. An essentially complete first reel copy has been located, and scanned in it's entirety (every single frame) and this document describes it.

NOTE: In earlier Report Releases, I discussed first reel footage, and known frame scans from various scenes. One showed a man on horseback, with a second pack horse, but the man was in shadow, as the horses apparently stood still with heads down, as if drinking from a stream. It is shown below:

I had been told that man was Roger Patterson, and so in my reports, I identified him as such. With this new analysis of the footage, and the production of composite landscapes, I was finally able to connect that man in shadow footage to some scenes with Bob Gimlin riding away into a gully. On that basis, I must now conclude the man in shadow is Bob Gimlin, not Roger Patterson, and the early report PDF's have been revised with a notation of the date and cause of the revision.

The Solution Found

The solution deserves a bit of historical note, and an immense tribute to John Green. John was present on October 22, 1967 at Al DeAtley's home when the Patterson footage was first shown to Roger, John, and Rene Dahinden. John and Rene are reported to have soon negotiated a deal with Roger for Canadian rights to the film, and they needed copies for their study as well as presentation. So they received the first reel from Roger (the camera original) and took it to a facility called Canawest, which was both a lab and a film production service company.

These men could not look into the future and forsee the intense interest and powerfully debated controversies today, so they did not do the rigorous documentation of every step that both analysts and critics today claim is necessary. In this report, I will simply describe factually what actually was done, and not indulge the "Monday morning quarterback" arguments of armchair analysts today who try to say the men 44 years ago did or did not do things right.

The Canawest lab, as a matter of routine practice, examined the camera original before setting it up for printing copies. No splicing or editing of that original was reported and it would have been virtually impossible to disguise a physical splice on actual film physically examined. As best as I can reconstruct, they chose the following copy method: They would first print to an Ektachrome film stock (a reversal positive type film) a print master (generally called an "interpositive" in normal lab copy terms), and from that they would strike off several actual reversal copy prints for John and Rene from this interpositive master.

If they simply wanted a straight copy of the PGF reel, they could have gone to first gen copies, as Roger himself reportedly did. Roger's first gen straight copies were true full frame and contact printed. John Green and Rene Dahinden chose an alternate copy process, as we should be forever indebted to them for their choice, because what they chose now, today, provides us with the very best analysis copies. They chose (presumably with consultation of the Canawest staff) to make multiple copy versions on that Ektachrome interpositive master, using an optical printer instead of a simple contact printer.

A contact printer simply bipacks the source film (the copy source) to physically make aligned contact with the copy raw stock, and shine a light through the source film onto the copy raw stock, making a true full frame and identical size image on the copy, frame for frame. This copy method has no capability to do slow motion effects, freeze frame effects, zoom in effects or such. It is a pure and straight across duplicate of the source footage.

An Optical Printer however is a fascinating device which has a projector coupled to a camera, and two unique capabilities. First, the projector has a zoom lens on it so it can project the full frame or zoom to enlarge a smaller portion of the source image to full frame size, thereby magnifying the image on the copy. Second, the projector can cycle the projection frame advance in a pattern independent of the camera frame advance, so it can project one frame twice, or three times, or over and over, as the camera keeps taking single frames, to produce slow motion or freeze frame effects on the copy.

John Green, Rene Dahinden, and the Canawest staff agreed to do a whole series of copies from the source reel Roger provided, using all the various capabilities of the optical printer (one shown above).

They first printed a straight across 1:1 image ratio, frame for frame copy of the entire reel Roger provided, thus an intact full first reel.

They then reset the projector lens to zoom in and magnify the source image by a 2:1 factor, and printed just the PGF segment at a 2x magnified form, which enlarged the filmed creature so it is only one third the height of the frame, instead of one sixth. The benefit of this is that there is far less loss of detail in the creature body on the copy, thus making these 2x zoom copies better for study of the actual creature. They also double printed these 2x zoom copies, repeating each original frame twice, so a standard film projection would have a slow motion effect, since at the time the analysis of the film was usually by film projection (video and computer graphics were not analysis or diagnostic tools yet, at that time).

They then printed some selected single frames over and over so, on projection, the image would be frozen for study, even though the projector was running film through it (you can set some projectors to a still freeze frame mode, where they stop the film motion and just project one frame, but the intensity of the projection lamp is so high, it will burn the film unless a heat shield is dropped in place, and that heat shield dims the projection and diffuses it somewhat. So a freeze

frame print repeating the same frame 100 or 200 times, is a better way to study a single frame under brighter light and greater optical clarity).

They also printed a short segment (commonly called the "lookback" segment) at a 4x magnification, but something apparently was not properly aligned in their setup and it is a bit blurry, thus making it poor for analysis. The ANE company, in 1971, would also get Roger's camera original and they made a 4x zoom optical print for their documentary, "Bigfoot man or beast" and my Copy 8 from my inventory is from that work. The 4x magnified print ANE made is superior to the Canawest version. However, all the other Canawest lab print versions are expertly done and are of outstanding visual clarity).

This Canawest labs interpositive master may have run about 200-300 feet in total (hopefully we can one day locate that interpositive and verify the exact length), but at this time, we cannot verify 100% of what all they printed.

That was late 1967. John Green expressed to me a recollection that the deal was the Canawest lab would retain the interpositive master in their film vaults for safe storage, and that it could only be checked out by mutual permission of both John and Rene. Print copies were made for both men, but the exact number is not documented.

John Green received multiple print copies from this master interpositive, and he edited sequences into his various film presentation reels, for lectures and such. Pieces and segments he did not edit into other reels were kept on one archive reel. That reel, containing about 400 feet of copy footage, was packed on an 800' reel and newspaper was wadded up and packed around it to fill in the reel empty space, and the reel was sealed in a film can provided by Canawest labs. The newspaper wadded up around the reel was from his hometown newspaper, and dated September 17, 1970.

This is the film reel I first examined in January, 2009 when I visited John to hopefully scan a full frame copy for my filming site and photogrammetry analysis effort. My time doing scans was limited, and my highest priority was getting a full frame version of the PGF itself, so the scans of horses and riders was just a brief side consideration. The film reel chosen (from among 5 reels John had) was one packed in newspaper dated 1970, in the hopes this might be a good archived copy. I did find a full frame version on the reel, and so that's what I scanned. A second priority was to try and find some trackway footage Chris Murphy remembered once seeing on one of John's reels, and so we searched for that and eventually found it. I scanned 202 frames of trackway footage.

The reel was repacked in the same newspaper we found in it, and closed back up in the film can John had. That was January 31, 2009.

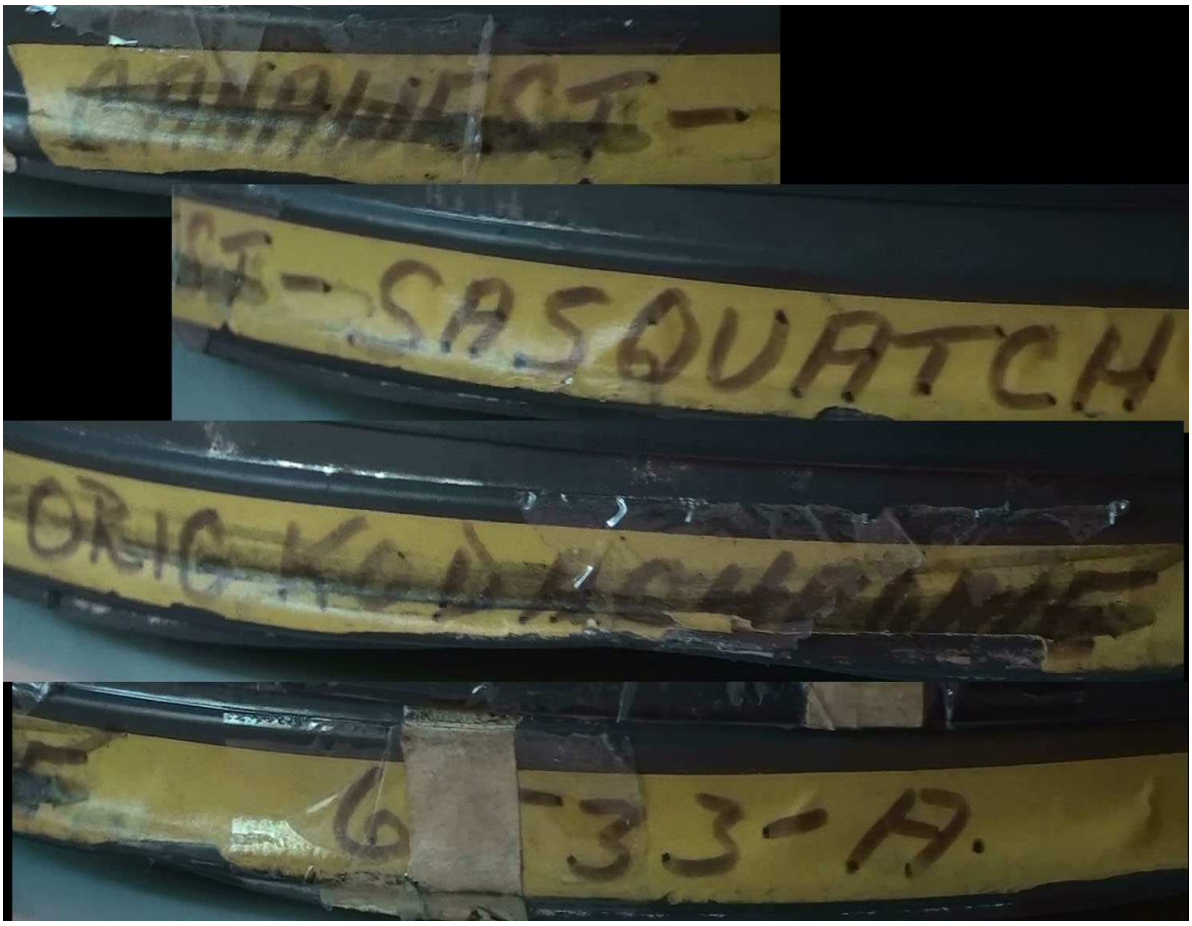
More than 2 1/2 years later, I had scanned multiple copies of the PGF plus other Bluff Creek related film, and some parts of Roger's documentary footage before the Bluff Creek expedition, and so I was far better prepared to deal with the issue of solving the first reel content controversy. I wanted another look at that reel John had, and John was gracious enough to agree to send it out to me for a more thorough examination. Bill Miller was wonderfully helpful as well, because John's health was limiting his activity so Bill Miller picked up the film can and coordinated with

me the Fed Ex pickup which would deliver it to me. It arrived in the first week of September, 2011.

This time, I documented the material and preparation for the examination and scan.

This (above) is the film can, as it arrived, unopened. Examining the outer markings of the can, particularly writing on a tape around the base half of the can, I found the following writing (Next page):

R1 Image 2 tape markings



The writing reads “ Canawest - Sasquatch Orig Kodachrome 6533-A"

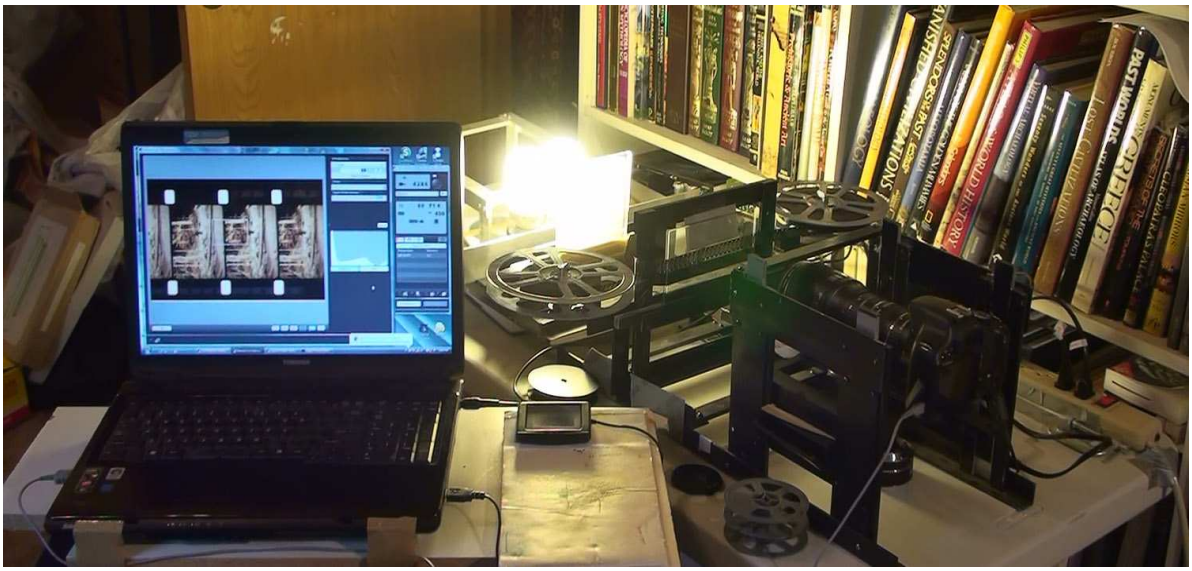
“Canawest” is the name of the film lab facility which did the copy work.
“Sasquatch” is the likely “title" they chose to identify the content (presumed).
“Orig" is a common abbreviation for “original" and in film lab copy terms, the “original” is the source film copies are to be made of.
“Kodachrome" is a film type, and since the copies are made on Ektachrome (the interpositive) and Copy Print film for the copies, we may presume the “Kodachrome" refers to the type of film that the source original was.
“6533-A" may be a lab work order number, but this is simply a presumption of regularity, not a documented fact. It may have some other meaning we do not know.

Opening the can, I found it to be as I had remembered it from 2 1/2 years ago, the way Chris Murphy and I had re-packed it up once I did that first PGF scan in January 31 2009.

R1 Image 3 Newspaper

The newspaper was carefully removed and unfolded, so I could photograph the publication date. It was September 17, 1970, on each of the two sheets of newspaper that were in the can, wrapped around the reel.

To fit my scanning device, the film was transferred to a 400‘ reel, and then loaded into my scanning system. My scanning system has two basic configurations, one which passes the film sideways through two sheets of glass, and allows me to scan the film from side to side and catch slightly more than three continuous frames (configuration One), and a second configuration which loads the film into a 16mm projector especially modified for my purposes, to scan each film frame individually. Below you see the first configuration, which I refer to as an “Inventory Scan”.



The Inventory scan specifically allows me to scan such things as writing on the head or tail leader, scan edge codes and film date codes, and splices, tears or other film condition markings.

It also allows me to scan three frames in sequence, ideal for identifying camera start indications (where the first frame of a segment is usually lighter in exposure than the second frame or rest of the frames of the segment). The Inventory Scan also allows me to get an overview of the actual segments and film content of a reel, in a quick and efficient manner.

The scanning system you see is a configuration I developed specifically for PGF studies. The scanning device itself is a Canon Rebel Xsi 12.2 megapixel digital camera, capturing a digital image of 4272 x 2848 pixels, and has the capability to be coupled with a computer so the computer operates the camera and saves the scan data in both a RAW format and a JPEG format.

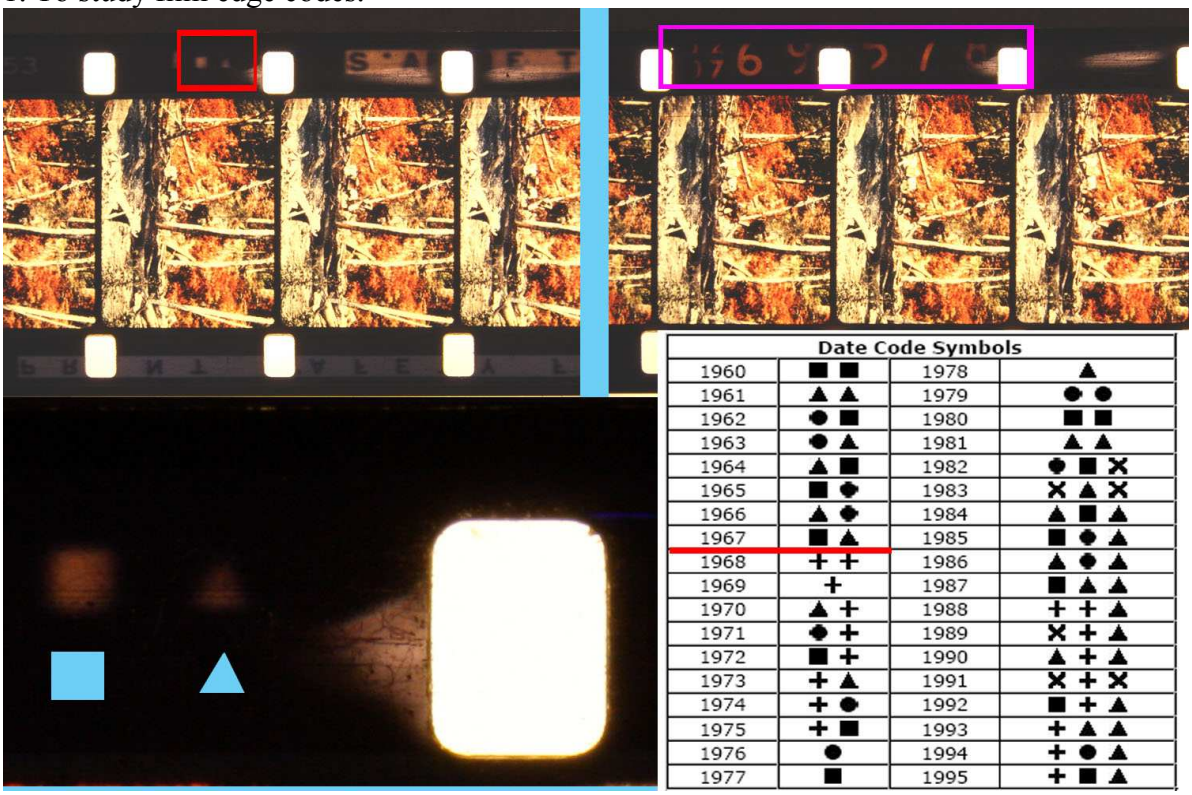
The lens is a 100mm marco lens, with extra extension tubes added to allow for magnifying the film image greater than a 1:1 ratio. Thus, I can fill the 4272 pixel sensor with an image even cropped into the 16mm frame image size. The camera is mounted on a custom rig I made, with vernier focusing adjustment, and I usually focus on the actual film grain itself to get the sharpest focus of the film image plane.

So once it is connected to the computer, all camera operation and settings are done on the computer, including the shutter release. The Computer is a Toshiba 17“ laptop running Windows Vista. I never use the built in laptop touchpad because I find it ergonomically poor, so I attach a USB ported touchpad on the right side of the laptop in an ergonomically superior position. The camera also connects to the laptop by USB port.

Reasons for doing an Inventory Scan (illustrated)

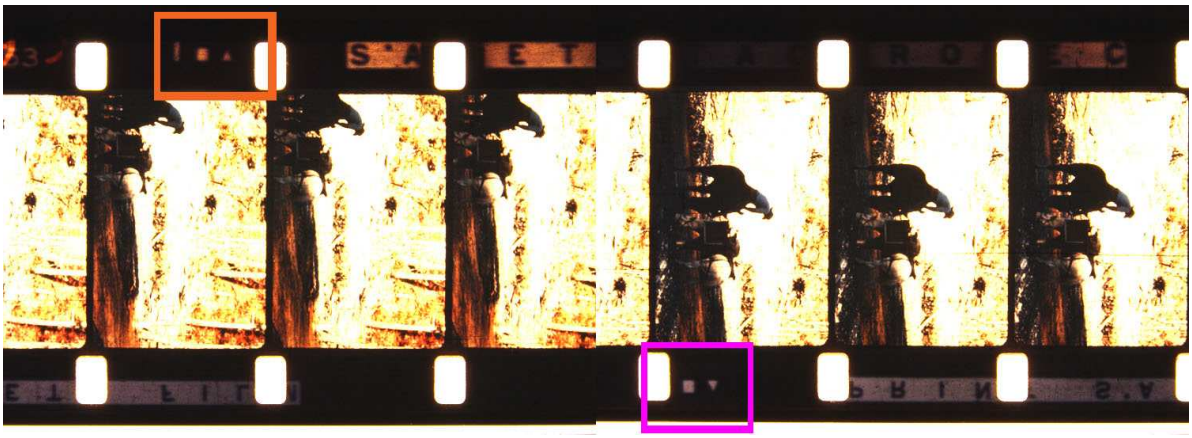
The following are examples of what I use the inventory Scan setting for:

1. To study film edge codes.



Date Code Symbols			
1960	■ ■	1978	▲
1961	▲ ▲	1979	● ●
1962	● ■	1980	■ ■
1963	● ▲	1981	▲ ▲
1964	▲ ■	1982	● ■ ✕
1965	■ ●	1983	✕ ▲ ✕
1966	▲ ●	1984	▲ ■ ▲
1967	■ ▲	1985	■ ● ▲
1968	+ +	1986	▲ ● ▲
1969	+	1987	■ ▲ ▲
1970	▲ +	1988	+ + ▲
1971	● +	1989	✕ + ▲
1972	■ +	1990	▲ + ▲
1973	+ ▲	1991	✕ + ✕
1974	+ ●	1992	■ + ▲
1975	+ ■	1993	+ ▲ ▲
1976	●	1994	+ ● ▲
1977	■	1995	+ ■ ▲

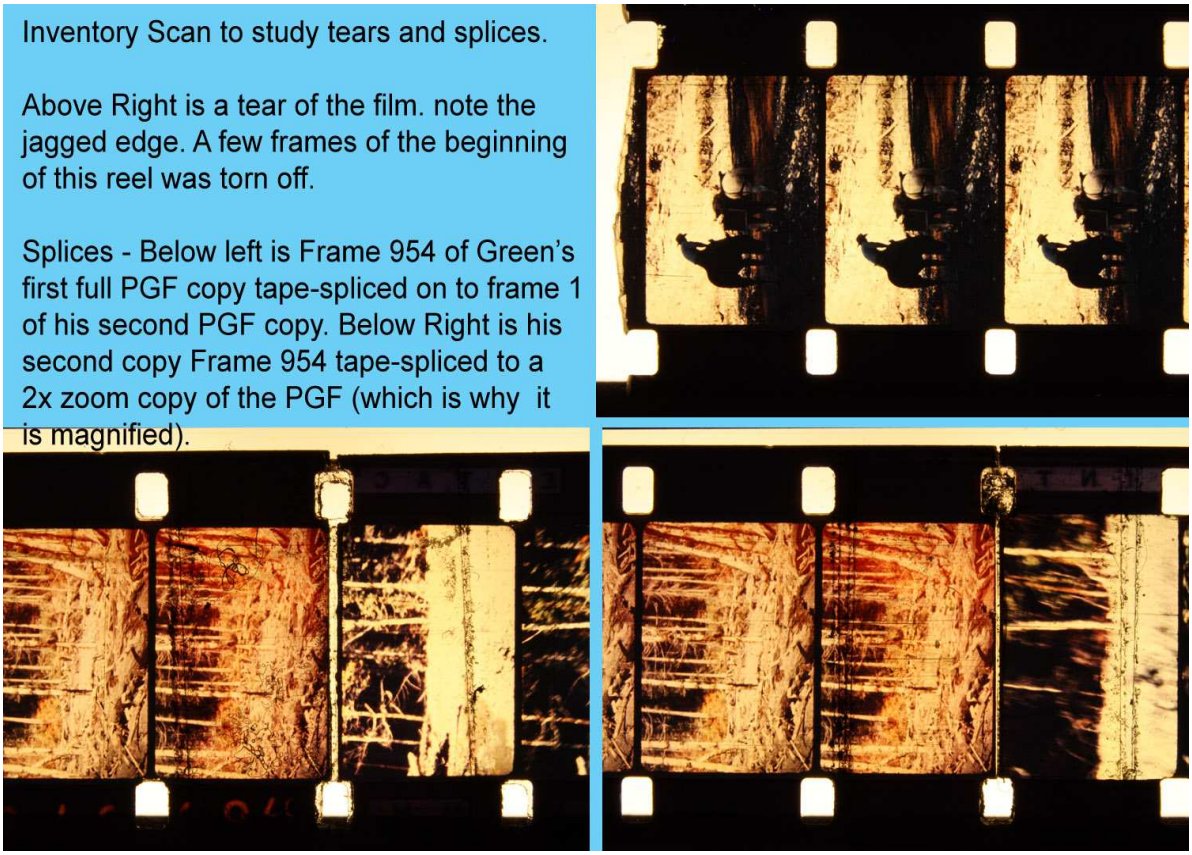
In the above image, the top frame scans have valuable latent image code between the sprockets, which is usually not captured when a frame scan is done or seen when the film is projected. Top Left shows a date code (red box around it), the same enlarged lower left, and blue square/triangle symbols added to clarify what you are seeing. Lower right is Kodak's date code chart, so a square followed by a triangle is 1967 manufactured film stock. Top Right in the magenta box is standard Ektachrome film edge numbering.



In the above example, you see two date codes, one on the top sprocket side, and one on the bottom sprocket side. The top side is from the copy source Ektachrome Interpositive film stock which Canawest first made. It prints through to copies (Orange square). The bottom date code (magenta square) is for that actual print film copy stock used to make the actual piece of film examined by me. The difference is that the copy stock latent image is original (actually exposed onto this film stock) so it's square/triangle shapes are sharp in form. The Ektachrome date code symbols are copied from another film, and thus lost some sharpness from being copied and the second generation grain reduced detail. This is how we know which edge code belongs to the Interpositive source, and which belongs to the print copy stock.

Both codes are square/triangle, meaning both films were made in 1967.

R1 Image 7 tears and splices

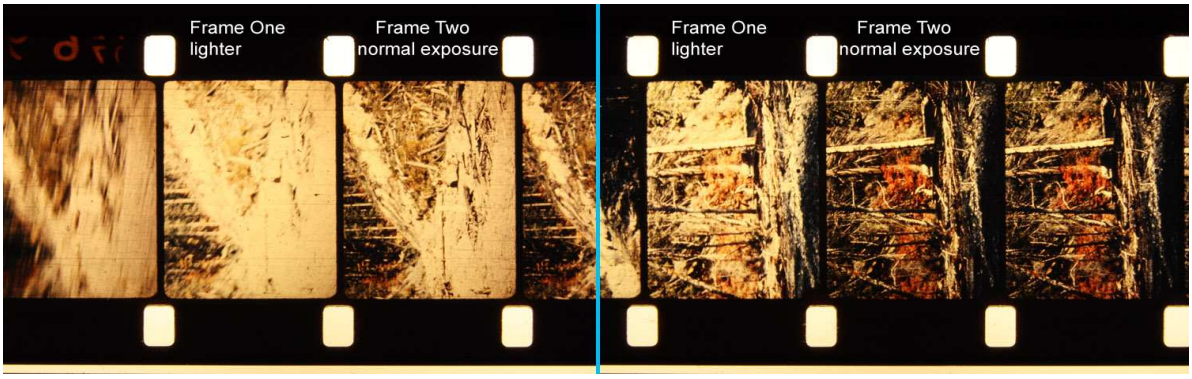


Inventory scans are also valuable for analysis of tears, damage, and splicing (yes, splices are made for routine assembly purposes, no hoax required). The above right is the very start of John's reel, and we see a tear on that opening segment, so a few frames and the headleader have been torn off (most likely accidentally, unless you are inclined to be paranoid).

The two lower segments show the tape splicing assembly John used to connect the end of his copy one of the full frame PGF (frame 954) to the first frame of his second copy of the PGF (the left set) and the right set shows the end of the second PGF full frame copy attached to part of a 2x zoom in portion of the copy inventory (Canawest made both full frame and zoomed in

versions). As you can see, routine splicing leaves many obvious indications, including lines across frame image areas, when conventional tape splice pieces are used.

Finally, Inventory Scans are useful in studying camera starts, where I can see the first frame of a segment overexposed as compared to the next frame in the segment. below are two examples:



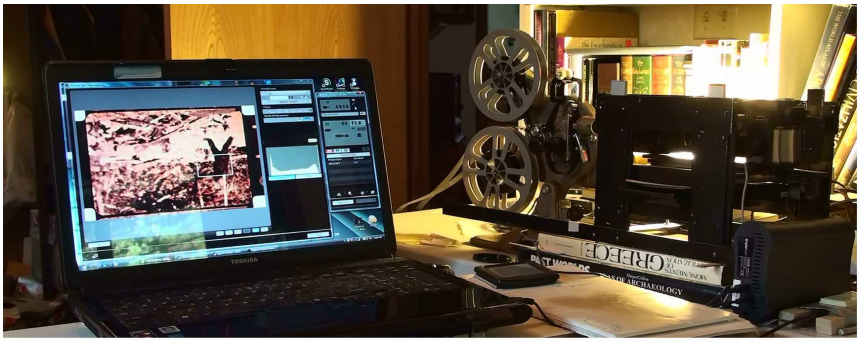
Inventory Scanning allows for all these aspects of the footage to be documented and studied.

The image below compares an Inventory Scan to a Frame Scan:

Inventory Scan (left) compared to Frame Scan (below)

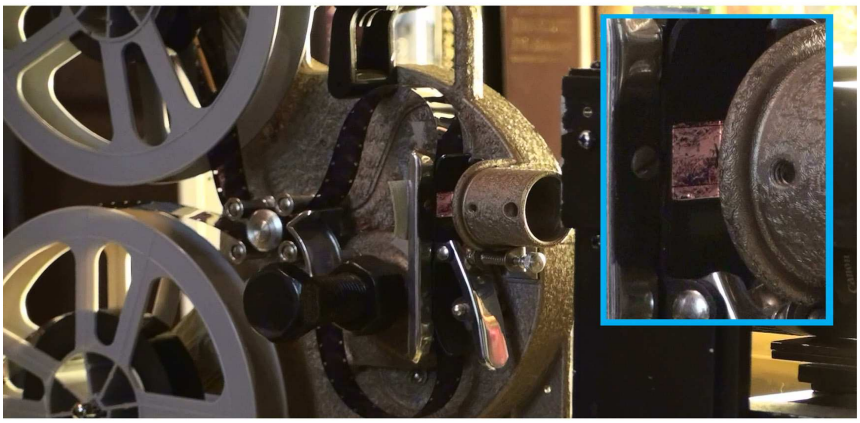
Frame Scanning

The second scanning configuration I use is the frame scan configuration. It scans each film frame individually and at high resolution. The vertical captures slightly more than one true frame, allowing the black frame separation lines on top and bottom of the frame to show, which is necessary to rectify the frame and scan image pixels to fractions of an inch, so image measures can be reliably taken.

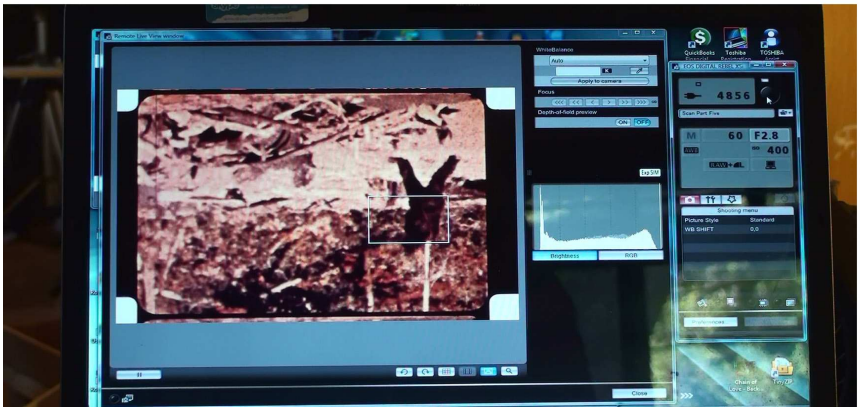


Scan Configuration Two - Individual Frame Scan.

Left shows system



Projection Element frame of PGF is partially seen in blue boxed image.



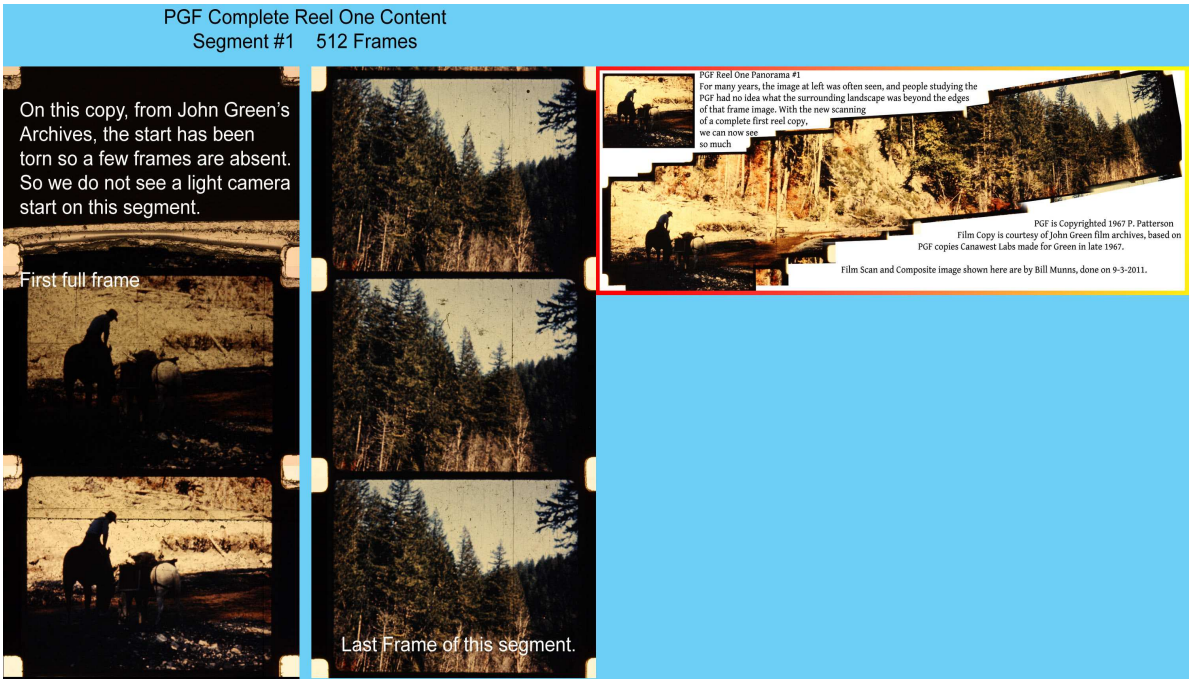
The scanning computer screen showing actual scan image area, one full frame plus some sprocket area

The procedure for analysis of this film reel was to do the inventory scan first, to capture all the film edgecode data and segment starts and stops, and then do the actual frame by frame scan of every single frame in this first reel copy. The individual frame scans allowed me to develop the exact scan frame count for each segment as noted and described below.

First Reel Inventory of Scenes and Frames

NOTE: These following charts are available in higher resolution from the Report Website, if you find the PDF document resolution difficult to read text on the charts.

Segment 1 512 frames (possibly more because of torn film)



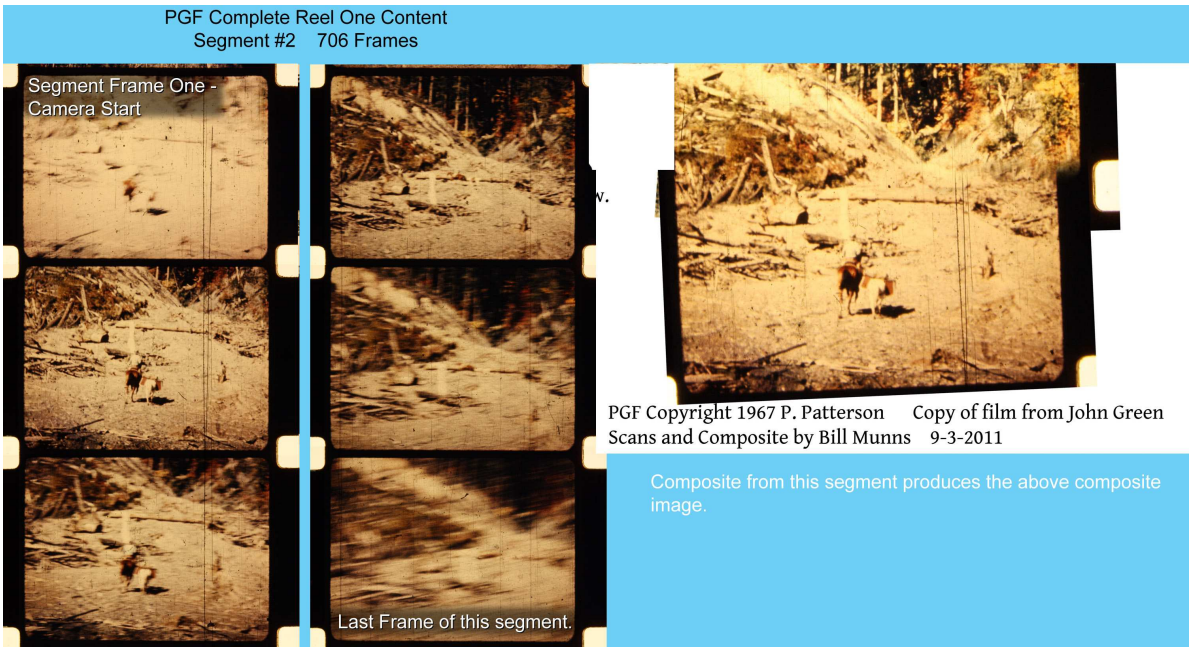
Segment 1 starts with a man on horseback, a second pack horse to his right, and the man is in shadow (which caused some confusion as to the man's identity). Both horses appear to be drinking from a stream, but the stream is not clear in the frames which center the man. The composite landscape (shown above right) reveals the stream more clearly and gives us a greater sense of the woodland setting.

Note on this copy from John Green's reel, the film was torn and so some frames from this segment are missing. We cannot yet determine how many are missing. But continued investigation of film copies should produce another copy with this segment intact, to resolve this matter.

The unification of this film segment with the landscapes of Segments 2, 3, and 4, which show Bob Gimlin, lead us to conclude thus first segment shows Bob as well. The camera is essentially in the exact same position for all four segments, and is hand held, so the camera operator is reasonably assumed to be the same person. If only two men were present, that the man on camera is likely the same man in all four segments.

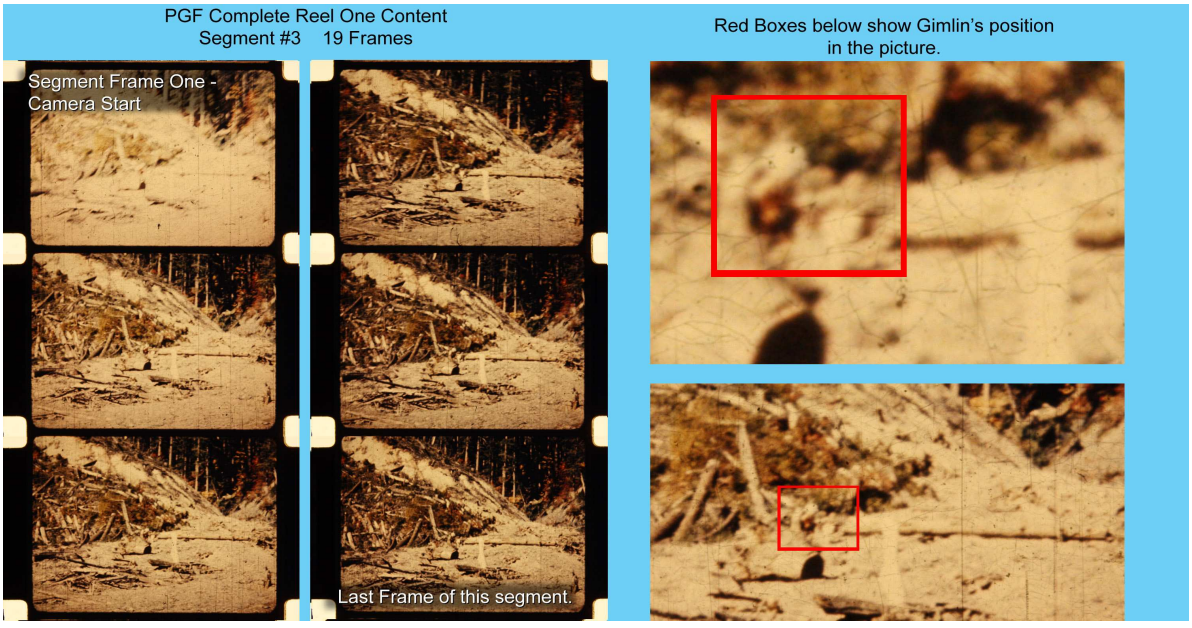
Segment 2 706 frames

This segment is the primary one showing Bob Gimlin riding away from camera into the gully.



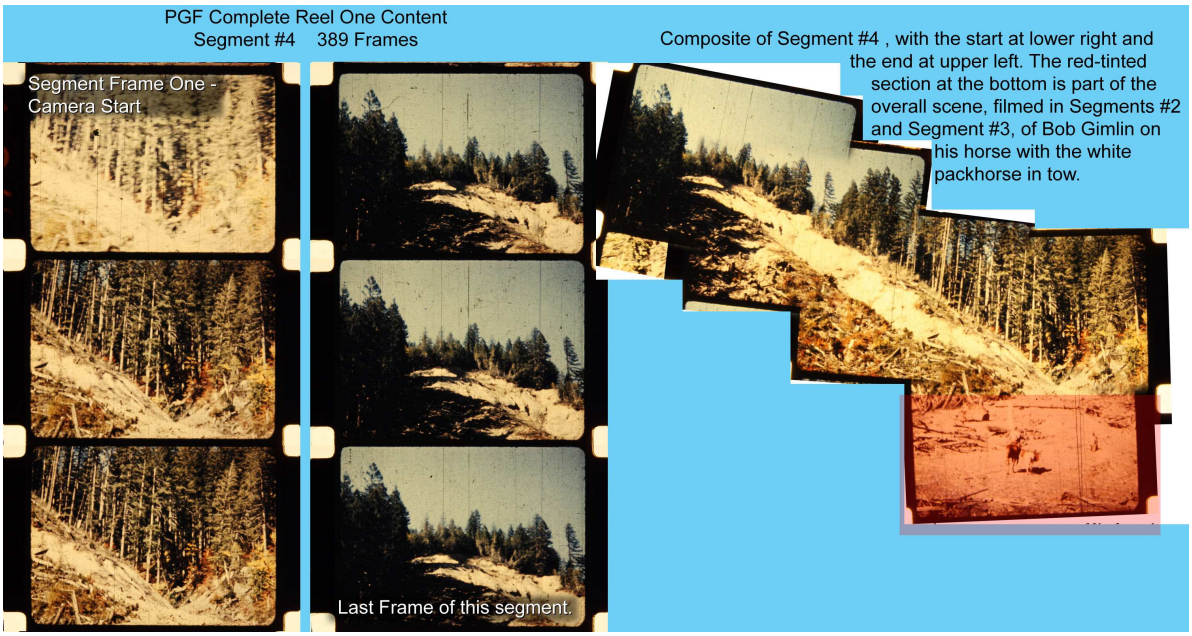
Segment 3 19 frames

This segment is curious for the short duration, a mere 19 frames (which is slightly more than one second, if 16fps or 18 fps was the camera speed setting). Bob Gimlin is very far away.



Segment 4 389 frames

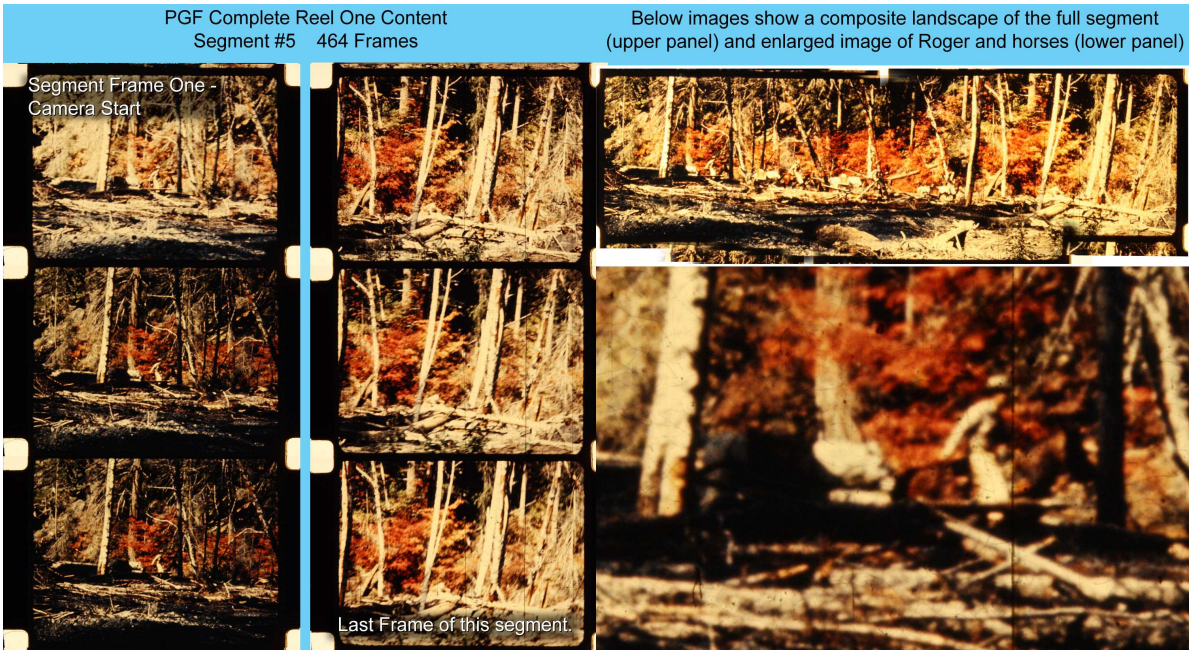
This segment doesn't show Bob, but rather shows a panoramic view of the larger landscape up and to the left of the scene Bob is shown in.



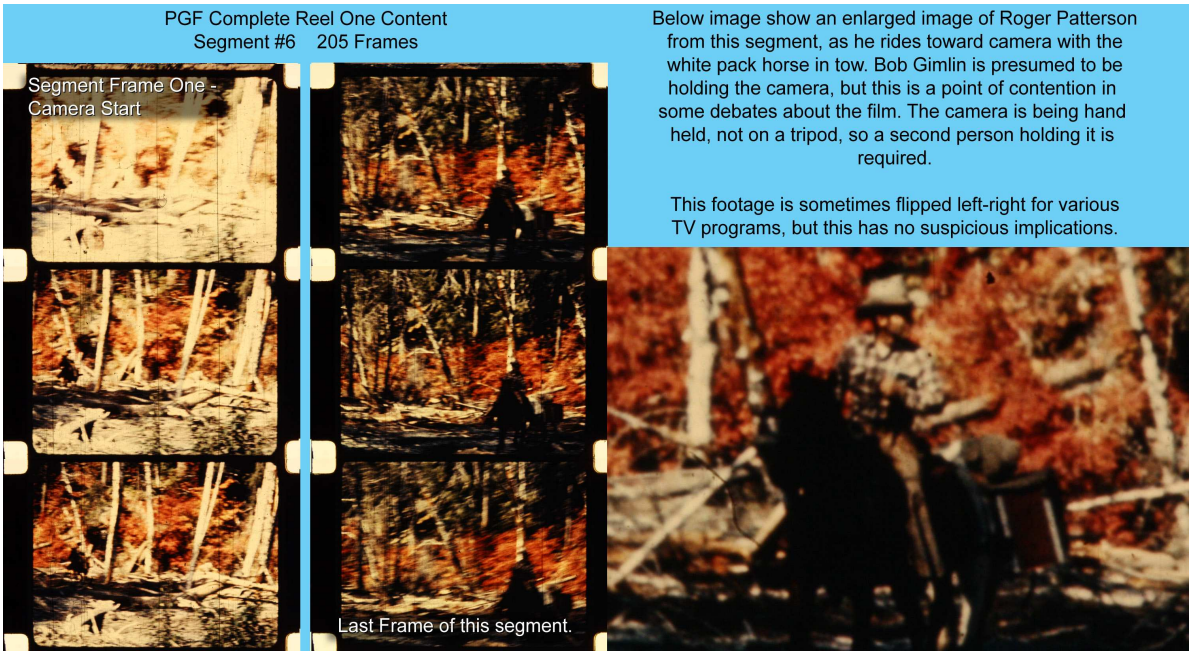
Below shows the final unification of the landscapes shown in the first four segments.
A high resolution version of this chart (below) is available from the Report Website, and it includes the landscape markers that were used to unify the composites.

Segment 5 464 frames

This footage is Roger Patterson himself on camera, and segments 5, 6, and 7 were taken from the same camera position, one segment after the other, with only short interruptions. Segment 5 shows Roger riding left to right along a path or road, and a study of the gait of the horse and duration of frames may potentially settle the camera filming speed issue, because we can calculate Roger's side to side distance by scaling to his known height (with allowance for his posture on the horse) and thus calculate his distance in a given number of film frames.

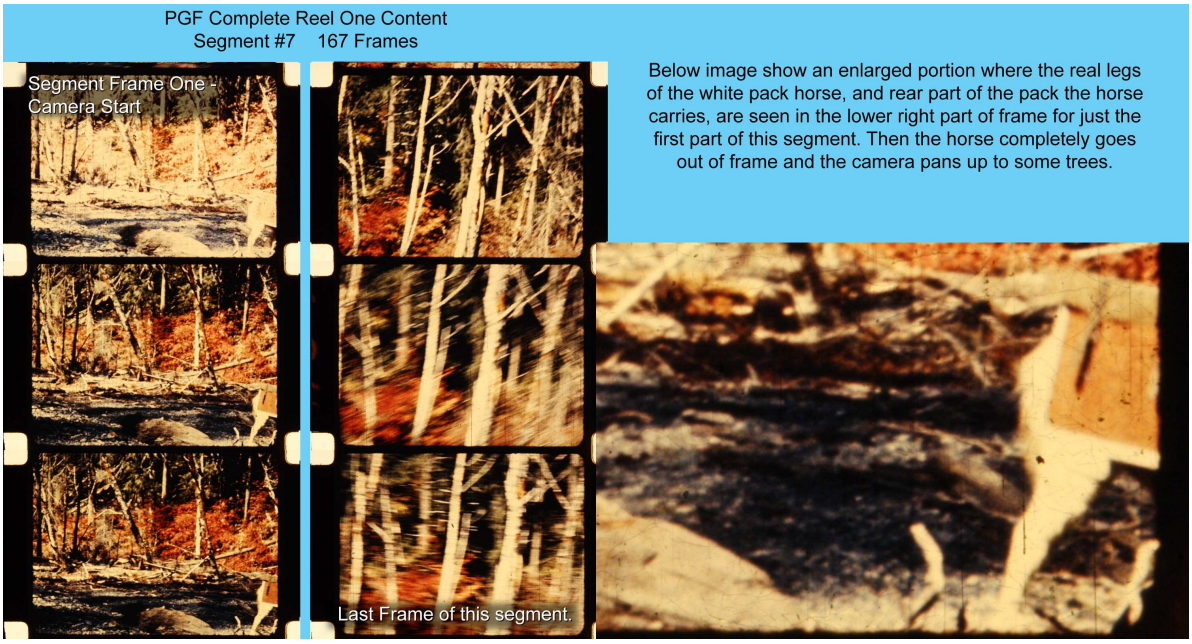


Segment 6 205 frames Shows Roger riding toward camera.

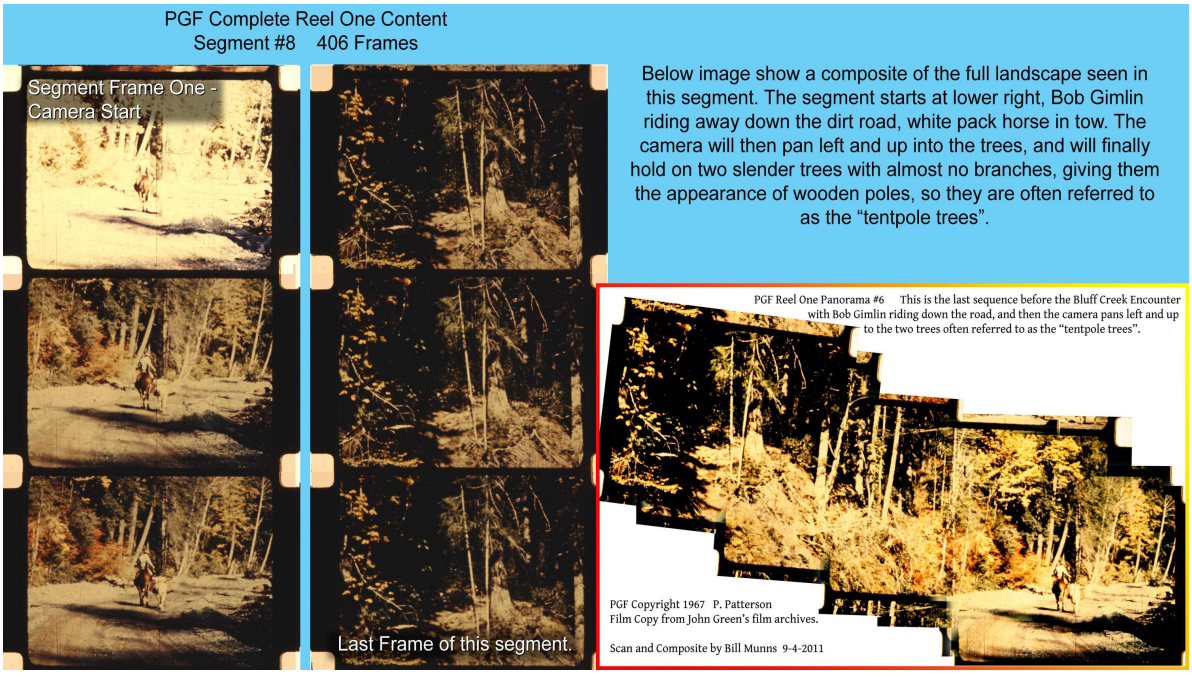


Segment 7 167 frames

This is a curious segment because the white pack horse is partially shown (only it's rear body portion) and then it goes entirely out of frame, and the camera pans right and up to some trees. This could be evidence of a camera lens mis-matched with a viewer lens of different focal length, which could confuse a person as to composition the camera is actually filming. This issue is still under investigation.



Segment 8 406 frames This is the final horse/rider segment before the "encounter"



Total Known Reel Frame Count (as of October, 2011)

We can now verify 2868 frames total, thus far, for the first reel footage that appears before the Bluff Creek Encounter which is generally referred to as the PGF (Patterson-Gimlin Film).

We should expect that frame count to expand slightly when a copy is located which shows what was torn off of this copy analyzed.

Segments 9-14 (the true PGF) contain 954 frames (currently verified) with six filming segments. These have been documented in prior report releases and so will not be repeated here. The scan of this reel provided by John Green contained two copies of the full frame PGF intact, one on the essentially intact first reel footage, and a second PGF copy spliced onto the first. Both contained the same exact 954 frames, and both copies were scanned in their entirety.

So now we have verified a total of 3822 frames of the first reel footage. This calculates to be 95.5‘ of footage at 40 frames per foot.

The question may arise, “where is the other 4.5‘ of film and what’s on it?” But this is a simplistic and misleading question because it assumes that a 100‘ daylight reel of 16mm film has exactly 100‘ of good footage, which would be 4000 frames. But the truth of a daylight reel is that it’s footage can actually be less than a true measurable 100‘ (4000 frames) of good footage. To appreciate this, one needs to understand how a daylight reel is loaded and unloaded from a camera, like the Kodak K-100 model used.

A “daylight reel” has solid black metal phalanges on each side of the core to shield the film from light. Only the outer most layer of film gets exposed to light when the film is loaded or unloaded, if the film is tightly wound around the reel. But the loading and unloading process exposes more footage.

To load, you must spool off enough footage to go from the feed reel through the diagrammed film loop path to the film gate, and follow the take-up reel loop path to the take-up reel, and wrap the film around the take-up reel’s core to hold it securely. This alone may expose 2‘ or more of film to the light. Then, a camera operator generally closes the film gate’s pressure plate and runs the camera for a second or several seconds, to watch the film movement through the gate, and see that the feed and take-up loops are loose enough to insure the gate pulldown goes smoothly.

If we assume Roger had his camera set at 16 fps, then 2 1/2 seconds of testing the film movement would run another foot of film out exposed to the light. If an adjustment needs to be made to the gate loops, and another test run of the camera is done, then another foot or so can be exposed.

If we now assume that the operator is satisfied with the threading of the film, and the smooth film movement through the gate, then the operator closes the camera. But all the film from the gate back up to the feed reel of source film, and one layer of film wrapped around the outside edge of the reel, is also exposed to light and has not yet passed the film gate for picture exposure. If you simply start shooting now, the first 2-3 seconds of your filming will be washed out and useless.

So the operator now must run off a few seconds of film with the camera door closed, to get all that washed out footage past the gate. Since the operator likely doesn't know exactly how many inches of footage are washed out, and isn't likely to try and calculate the frame rate and frame size to get an exact calculation of how many seconds to run the camera, the operator usually just lets the camera run for a few seconds to presumably get past the washed out section. Another foot or two can be lost in this process, but it will vary from reel to reel, operator to operator.

So now we have about 4-8 feet of film exposed or washed out before true filming starts.

When the reel is unloaded after run-out, the outermost layer wrapped around the take-up reel is totally washed out when the camera door is opened. but if the film is loosely wrapped around that reel (and keep in mind, there's nothing to hold it tight), then it's possible a second layer of film is also exposed and washed out. The reel has an outer diameter slightly more than 3 1/2", so the film wrapped around it has a circumference length of over 11", almost a foot. So one foot for sure, maybe even two or three, can be washed out depending on how tight or loose the film wraps around the reel when the door is opened.

So normal operation can cause anywhere from about 4-8 feet of film lost on the front end, and 1-3 feet lost on the back end, just by the normal daylight loading (this includes low light such as the person using a jacket, blanket or similar cloth article to shield the camera from direct sunlight. If there's enough light for the operator to see what he/she is doing, there's enough light to wash out the footage thus exposed as described above)

So the simple reality of a daylight reel is that with usual loading procedures, some footage is lost to light washout, and that lost footage can reasonably be from 5-11 feet. Every reel will have a different number of true properly exposed frames, but a 100' reel having 98, 96, or 95 feet of real footage is not uncommon or suspicious in any way.

Precisely because of this loss of film to daylight loading light washout, Kodak actually makes a "100 foot reel" longer than a true 100 feet. That extra footage allows for this loading procedure to wash out some footage, and still allow the customer to film approximately 100 feet of good footage, but the exact amount of footage still varies with the specifics of how the camera was loaded. So in fact, the usual 100 foot daylight reel has somewhat less than 100 feet (4000 frames) of usable footage.

So when we look at the current frame count and see it totals 95.5'of footage, to expect that exactly 4.5' being lost (from this copy) is unrealistic and amateurish. The torn off part of John's reel could reasonably be as little as a few frames, or could be a few feet, but we cannot assume one over the other. So any expectation that the few missing frames from segment one are "hiding something" would be indulging in paranoia, not reason based on actual camera operator knowledge and experience.

The PGF does however inspire paranoid delusions and so I would anticipate this issue will inspire such among the lunatic fringe.

Acknowledgments

John Green - An immense debt of gratitude is due to John Green for making the optical print interpositive and copies 44 years ago. He has preserved the PGF in a form that makes the analysis solution of the film possible. I wish to thank him for his consent to allow me this second examination of the reel, because it has truly given us something researchers have wondered about for over 4 decades. “What exactly is on the first reel?”

Now we know, and we have John to thank.

Bill Miller - I wish to express my gratitude also to Bill Miller, because of his efforts to obtain the reel from John and then coordinate with me on the shipping arrangements to get the film can from British Columbia to Southern California.

This concludes the First Reel Analysis done October, 2011

Bill Munns www.themunnsreport.com